

1. (currently amended) A method of guiding the placement or observing the operation of an invasive medical device comprising:

operating an invasive medical device from an invasive medical device system to perform an activity within a body;

operating an ultrasonic diagnostic imaging system to guide or observe the invasive medical device by means of a real time three dimensional ultrasonic image;

producing information with the invasive medical device system having coordinate information relating to the activity; and

merging information from the invasive medical device system into the real time three dimensional ultrasonic image at a location in the ultrasonic image data which is determined from the coordinate information.

2. (previously presented) The method of Claim 1, wherein the invasive medical device includes a position sensor; and

wherein producing information with the invasive medical device system comprises producing coordinate information in response to signals received from the position sensor.

3. (previously presented) The method of Claim 2, wherein the position sensor comprises a receiver which receives signals in the acoustic, optical radio frequency, or electromagnetic spectrum.

4. (previously presented) The method of Claim 2, wherein the position sensor comprises a transmitter which transmits signals in the acoustic, optical, radio frequency, or electromagnetic spectrum.

5. (previously presented) The method of Claim 1, wherein merging information further comprises merging locational information into the real time three

dimensional ultrasonic image at locations where activity of the invasive medical device has been performed.

6. (currently amended) The method of Claim 1, wherein operating an ultrasonic diagnostic imaging system further comprises processing ultrasonic echo information to produce a real time three dimensional wire frame model of an anatomical region within a volumetric region of the body being imaged.

7. (previously presented) The method of Claim 6, wherein merging information further comprises merging locational information into the real time three dimensional wire frame model at locations where activity of the invasive medical device has been performed.

8. (previously presented) The method of Claim 6, wherein operating an ultrasonic diagnostic imaging system further comprises processing ultrasonic echo information to produce a volume rendered ultrasonic image in real time; and

further comprising displaying both the volume rendered ultrasonic image and the three dimensional wire frame model.

9. (currently amended) The method of Claim 8, wherein merging information further comprises merging locational information into at least one of the three dimensional wire frame model <430>and the volume rendered ultrasonic image at locations where activity of the invasive medical device has been performed.

10. (previously presented) The method of Claim 1, further comprising acquiring ECG data; and further comprising displaying both the real time three dimensional ultrasonic image containing merged information from the invasive medical device system and an ECG trace.

11. (previously presented) The method of Claim 10, wherein merging information further comprises merging locational information into the three dimensional ultrasonic image at locations where activity of the invasive medical device has been performed; and wherein displaying further comprises displaying a plurality of ECG traces related to the locations where the activity of the invasive medical device has been performed.

12. (previously presented) The method of Claim 11, wherein operating an ultrasonic diagnostic imaging system further comprises producing a volume rendered three dimensional anatomical ultrasonic image in real time.

13. (currently amended) The method of Claim 11, wherein operating an ultrasonic diagnostic imaging system further comprises producing a real time three dimensional wire frame model of an anatomical region within the volumetric region of the body being imaged.

14. (currently amended) A method of guiding the placement or observing the operation of an invasive medical device with a three dimensional ultrasonic imaging and invasive medical device operating system comprising:

operating an invasive medical device by means of an interventional device subsystem to perform an activity within a body;

acquiring ultrasonic echo information by means of an ultrasonic imaging subsystem from a volumetric region containing the invasive medical device;

producing information from the invasive medical device having coordinate information relating to the activity;

producing a real time three dimensional ultrasonic image with spatially coordinated invasive medical device activity information from the ultrasonic echo information and the information from the invasive medical device; and

displaying the real time three dimensional ultrasonic image with spatially coordinated invasive medical device activity information on an image display.

15. (currently amended) An ultrasonic surgical guidance imaging system which acts to guide—the—placement—or—observe the operation of an invasive medical device comprising:

an ultrasonic probe including an array transducer which steers ultrasonic beams over a volumetric region for image guidance of the placement—or—operation of an invasive medical device;

an ultrasound acquisition subsystem coupled to the ultrasonic probe;

an invasive medical device;

an interventional device subsystem coupled to the invasive medical device;

a 3D image processor coupled to the ultrasound acquisition subsystem and the interventional device subsystem which operates to produce 3D ultrasound images containing locational information of the invasive medical device in real time; and

an image display coupled to the 3D image processor.

16. (previously presented) The ultrasonic surgical guidance imaging system of Claim 15, wherein the invasive medical device further includes a position sensor; and wherein the interventional device subsystem further includes a device position measurement subsystem coupled to the position sensor.

17. (previously presented) The ultrasonic surgical guidance imaging system of Claim 16, wherein the 3D image processor is further responsive to locational signals produced by the device position measurement subsystem.

18. (previously presented) The method of Claim 1, further comprising acquiring parametric data; and further comprising displaying both the three dimensional ultrasonic image containing merged information from the invasive medical device system and a parametric image in real time.

19. (original) The method of Claim 18, wherein the parametric image is formed of at least one of ECG/electrical signals, tissue Doppler signals, strain rate signals, thickening measurements, or regional motion.